

PATENT COOPERATION TREATY

REC'D 06 JAN 2006

From the
INTERNATIONAL SEARCHING AUTHORITY

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To:
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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year)

04 JAN 2006

Applicant's or agent's file reference

H0005430-PCT

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/US05/10550

International filing date (day/month/year)

29 March 2005 (29.03.2005)

Priority date (day/month/year)

30 March 2004 (30.03.2004)

International Patent Classification (IPC) or both national classification and IPC

IPC(7): H05B 7/20 and US Cl.: 361/704, 719; 257/706; 165/80.3, 185

Applicant

HONEYWELL INTERNATIONAL INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
Facsimile No. (571) 273-3201

Date of completion of this
opinion

13 December 2005 (13.12.2005)

Authorized officer

Boris L. Chervinsky

Telephone No. 571-272-1850

Form PCT/ISA/237 (cover sheet) (April 2005)

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US05/10550

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of:

- ☒ the international application in the language in which it was filed
☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing
☐ table(s) related to the sequence listing

b. format of material

- ☐ on paper
☐ in electronic form

c. time of filing/furnishing

- ☐ contained in the international application as filed.
☐ filed together with the international application in electronic form.
☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US05/10550

Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims <u>NONE</u>	YES
	Claims <u>1-28</u>	NO
Inventive step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-28</u>	NO
Industrial applicability (IA)	Claims <u>1-28</u>	YES
	Claims <u>NONE</u>	NO

2. Citations and explanations:

Claims 1-3, 6, 7, 10, 11 15-18, 20-22, 24, 25-27 lack novelty under PCT Article 33(2) as being anticipated by McCormick et al. McCormick discloses a heat spreader comprising a base portion 112 having a heat spreading surface comprised of a heat receiving region made of a first material that is copper or copper alloy (col. 2, lines 65-67); a frame portion 110 made of second material (col. 2, lines 39-40) interfacing perimeter portion of the heat spreader and having opening traversing the thickness of the frame portion; the thermal conductivity greater than 300 W/mk or 400 W/mk is also disclosed (col. 2, lines 59-61). The method steps are necessitated by the device structure as disclosed by McCormick et al.

Claims 8, 9, 11 lack an inventive step under PCT Article 33(3) as being obvious over McCormick et al. McCormick et al. does not specifically indicate that thermal expansion is less than 6 ppm/k but it would be obvious to one having ordinary skill in the art at the time the invention was made to have the thermal expansion limited to claimed number to avoid stress in joined materials. The diffusion bonding is known method of joining of two different parts and as method step in the article claim does not render novelty as soon as the structure is disclosed.

Claims 4, 5, 12-14, 19, 23, 28 lack an inventive step under PCT Article 33(3) as being obvious over McCormick et al. in view of Edwards et al.

McCormick discloses the claimed invention except interface material such as solder or adhesive disposed between the frame and the base portion and between the base portion and the heat generating device. Edwards discloses such materials, therefore it would be obvious to one having ordinary skill in the art at the time the invention was made to use coating materials as disclosed by Edwards in the device disclosed by McCormick et al.